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Jansen, McClurg & Co., of Chicago. It is a pleasantly written romance, but it contains very little about Linnæus, and still less about botany.——Dr. Parry's paper on Chorizanthe, consisting of a revision and rearrangement of the annual species, first published in the Proceeding of the Davenport Academy of Sciences, has been republished in pamphlet form. It is a contribution of great value.

ENTOMOLOGY.

THE TRANSFORMATIONS OF NOLA.—The position of the genus Nola has long been an uncertain one. By some of the older authors, notably Hübner, the species were placed among the Pyralidæ, and Stainton in his Manual of British Butterflies and Moths regards the genus as forming "Family IX, Nolidæ" under the Pyralites, though he says: "One little group, the Nolidæ, is by many recent authors, and perhaps with reason, referred to the Bombycina, being placed with family Lithosidæ." The genus is now generally placed among the Lithosians. In our Synopsis of Bombycidæ we omitted to mention it, partly on account of want of specimens and partly perhaps from supposing it not to be a true Bombycid. Mr. Grote was the first American author to enumerate it in his New Check List of North American Moths, 1884, and to include it among the Lithosiæ.

Having reared *Nola ovilla*, my attention has again been drawn to its systematic position, which seems without much doubt to be properly among the Lithosiæ and near Clemensia.

I have found the larva frequently on the oak in September both in Maine and Rhode Island. Its habit is unmistakably Lithosian; it differs however from Arctian and Lithosian larvæ in having one less pair of abdominal legs, having but four pairs, whereas the caterpillars of the Lithosiæ and Arctians have an additional pair, *i. e.*, ten abdominal legs in all.

When I first discovered the larva of *Nola ovilla* I supposed it to be near Crocota. It was found to be common on the leaves of the oak in Maine, Sept. 6th.

The body is broad and much flattened, rather short, with four pairs of well developed abdominal feet; the first pair being situated on the fourth abdominal segment. The head is not very large, three-fourths as wide as the body; black, with a few paler irregular lines. The body is dirty-whitish, with a dark linear dorsal line, a dark dorsal discoloration behind the head, another in the middle of the body, and a third near the end.

The body is hairy, though not densely so; on each segment are four dorsal tubercles from which radiate short dusky hairs; on the side is a larger and longer tubercle from which arise lateral very long hairs, being as long as the body is broad; some black hairs are mixed with the dirty-whitish ones. The larger and most of the shorter hairs are simple, not barbed, but the shortest, smallest hairs are finely though slightly barbed. the barbules short.

The tubercles are dirty-white, concolorous with the rest of the body. Length 13mm.

Sept. 14–16 the caterpillars made singular boat-shaped flattened oval cylindrical cocoons closely attached to the surface of the leaves; they were spun with silk, but covered closely on the inside with bits of oak leaves. The pupa appeared as soon as the cocoon was completed, Sept. 15. The moths appeared May 31 and June 1 of the following year.—*A. S. Packard, Jr.*

AN AFRICAN SOCIAL CATERPILLAR.—At the meeting of the Linnean Society of London, of March 20th, Lord Walsingham exhibited a large and remarkable nest of a species of Anaphe from Natal, containing a packed mass of cocoons, with specimens of the moth and her larvæ. The nest and living larvæ were received in August. Many of the larvæ remained in the nest, but others, in companies of from twenty to forty, occasionally marched out, moving in closely serried ranks, much after the manner of the larvæ of the procession moth. From December to February about 250 moths emerged, but from the difficulty of obtaining their natural food, all died, though a pair bred and the eggs hatched. The mature insect closely resembles the *Anaphe panda* Boisd., though under the latter name, it would seem, there are several well marked local races. The genus is found in West Africa as well as Natal; and it appears that in the several species the color, size, shape, and material of the common nest, as well as the individual silky cocoons, markedly differ. The species of Anaphe have been brought from Old Calabar, Angola, Natal, Gold coast and the Cameroons.

ANTENNÆ OF A BEETLE USED AS DEFENSIVE WEAPONS.—The genus Scorpionus (Cerambycidæ) of coleopterists, is so called on account of the peculiar shape of the last joint of the antennæ somewhat resembling the tail of a scorpion. I have met with a number of Brazilian species, all of which are broad, somewhat flattened, very rugose insects; the largest are nearly an inch and a quarter long and half as wide across the elytra. They are nocturnal, or crepuscular, in their habits, clinging to rough barked logs during the day; their rugose forms and sober tints harmonize so well with the surface that they are almost invisible.

While engaged in collecting near Rio de Janeiro, I found one of these beetles clinging, as usual, to the lower side of a log. Seizing it with my forefinger and thumb, I was about transferring it to the collecting bottle, when, to my surprise, it inflicted on me a pretty sharp sting or prick, which caused me to drop it quickly. In defending itself thus, the insect used its antennæ, spreading them out and then throwing them backward and upward with a strong jerk, so as to strike my finger and thumb just behind the nails with the scorpion-like terminal joint. I tried the experiment many times with this and with other specimens, and always with the same result; I have also noticed it in other species of the genus. The little wound produced by the insect caused a slight swelling and irritation, much like a mosquito bite, for an hour or two. Possibly this arises from a poisonous exudation from the surface of the joint; so far as I can discover there is no true poison gland.

I have never heard nor read of any case where the antennæ of insects were used as defensive weapons, and the fact appears to me to be of much interest. Many beetles have antennal spines, which are perhaps used for a like purpose. Certainly the femoral spines of allied species are defensive arms, and pretty formidable ones, as every entomologist knows who has tried to catch the insects with his fingers. So are the thoracic spines of many Cerambycidæ, the femoral spines of certain large moths, the cephalic and thoracic horns of Scarabæidæ, and so on.—*Herbert H. Smith.*

POLYMORPHISM OF MALE LUCANIDÆ.—At the meeting of the London Zoölogical Society for Dec. 18, 1883, Dr. F. Leuthner read an abstract of a memoir which he had prepared on the Odontolabini, a sub-family of the coleopterus family Lucanidæ, remarkable for the polymorphism of the males, while the females remained very similar. The males were stated to exhibit four very distinct phases of development in their mandibles, which the author proposed to term "priodont," "amphiodont," "mesodont," and "telodont." These forms were strongly marked in some species, but in others were connected by insensible gradations, and had been treated as distinct species.

REPORT OF THE ENTOMOLOGIST OF THE U. S. DEPARTMENT OF AGRICULTURE FOR 1883.—Professor Riley's report is shorter than his last year's, the limits being so restricted as to somewhat modify the original plan of the report and oblige him to omit a report on insects injurious to the cabbage, except mention of those caterpillars more specially injurious. The special agents in the Southwest are the same as the year previous. Professor A. S. Packard, Jr., supplies a report on the causes of the death of the spruce, fir and larch in northern New England, illustrated by two plates, one color showing the transformations of *Nematus erichsonii* and of *Tortrix fumiferana*, *Gelechia abietisella*, n. sp. and *Nematus integer* Say, which lives on the spruce. Mr. H. G. Hubbard has continued his work at Crescent City, Florida, where he is studying the insects affecting the orange, and reports on experiments on scale-insect insecticides. Mr. Bruner made in the summer of 1883 an extensive journey from New Mexico to Montana seeking facts relating to the Rocky Mountain locust. Among the other collaborators of the Entomological Bureau are Dr. S. W. Williston, who is working up the Syrphidæ and Tachinidæ, two families comprising insects so useful to the farmer; and Mr. John B. Smith, who is engaged on the insects injurious to the hops and cranberry, as well as a monograph of the Noctuidæ.

Besides notes on the silk-worm industry, insects injurious to the cabbage, the imported elm-leaf beetle is noticed at length, as well as the lesser locust (*Caloptenus atlanis*) which was destructive last summer in New Hampshire. The account of experiments with insecticides and the machines devised and figured by Dr. Barnard render the report one of high practical interest.

ENTOMOLOGICAL NOTES.—J. Chalande in an article on sensibility in blind cave-beetles (Anopthalmus) in the Bulletin of the Toulouse Society (XV, 1882), concludes with Piochard de la Brulerie, that their sensibility resides in their hair and is proportioned to the amount of this covering. The species of Anopthalmus are less exclusively cave-frequenting insects than has been supposed. In the United States, on the contrary, no Anopthalmi have been found out of caverns.——The insects affecting the strawberry are described by S. A. Forbes in a chapter of fifty-two pages in the Transactions of the Wisconsin State Agricultural Society, Vol. XXI.——E. Hoffer has published a paper on the habits of European humble bees (M. T. Ver. Steierm, 1881, Zoöl. Record for 1882), in which he states that the old queen lays eggs which produce all sexes; those of the so-called small females produce only females and workers. He also speaks of the trumpeter, who rouses the nests in the morning.——According to Dimmock (*Psyche*, III, 392), Witlaczil (Arbeiten Zool. Inst. Wien, 1882, 1–45), maintains that the so-called honey dew of Aphides exudes from the vent, rather than the cornicles. Dr. H. D. Walker takes the same view in his "Notes on Aphides" in Bulletin of the Buffalo Naturalists Field Club, I, No. 6, remarking that the cornicles "have generally been regarded as furnishing the honey dew of which the ants are so fond. This, however, I am satisfied from many observations, is not the case. The honey dew is simply the natural excretions of the insect. I am not aware that the use of these tubes is positively known." In the same article Dr. Walker notices pulsating organs in the legs of Aphides, like those described by Mr. Locy in the aquatic Hemiptera.——James Winters, a farmer, was stung to death by buffalo gnats near Helena, Arkansas, last spring. While he was at work in a field, the gnats swarmed up and enveloped him. Their stings becoming unbearable, he started for home at full speed. All remedies failed to relieve him, and he died in a short time in great agony, his face and neck having turned almost black. This is taken from a reliable newspaper exchange. The buffalo gnat is a species of Simulium, or black fly. They have been known to worry horses to death. (See NATURALIST, Vol. II, p. 590).——Sir S. S. Saunders, who died April 15, was an English entomologist well known for his thorough work on the Strepsiptera and fig-insects.——It seems that the Ray Society has acquired the drawings of the late Wm. Buckley of British caterpillars and his voluminous MSS. for publication. They will probably form the subjects for three or four volumes. Those entomologists (not already members of the Ray Society), who wish to obtain these volumes, should send in their names to the Secretary, Rev. T. Wiltshire, 25 Granville Park, Lewisham, London, S. E., England. We regard the publication of these sketches and descriptions as a great boon to American entomologists, in default of good figures of native larvæ.——At the meeting of the London Entomological Society, October 3, Mr. Wailly exhibited a Samia allied to *S. cecropia*, and possibly a hybrid between it and some other (unknown) species.——" The Butterflies of Maine" by Professor C. H. Fernald, is rich in new facts regarding the distribution and habits of these insects. It is rather startling to read of the occurrence of *Chionobas jutta* at Orono and of *Terias lisa* in the Isle of Shoals, *Euptoieta claudia* near Portland, and *Junonia coenia* near Bangor. Sixty-nine species are enumerated.——Dr. Heylaerts has nearly ready for publication a monograph of the Psychides of the world. In the *Compte-rendu* of the Entomological Society of Belgium, besides notes on European species, he describes four new species from the Argentine Republic, and also a new Cossus-like genus from Chirequi, under the name of *Romanoffia imperialis*.——In his paper on North American Papilionine and Nymphalinine caterpillars published in the Jena *Zeitschrift*, Professor A. Gruber carries on the work begun by Weismann in his great work on seasonal dimorphism, and describes and figures five stages of the larvæ of *Papilio asterias* and five of those of *P. turnus*, five of *P. troilus* and four of *P. ajax*, and five of *P. philenor*; of the Nymphalines four stages of *Melitæa phaëton*, three of *Melitæa marcia*, three of *M. nycteis*, two of *Argynnis myrina*. The paper closes with some general remarks; it will greatly interest American lepidopterists. The sketches alone tell a striking story.

ZOÖLOGY.

THE LIFE-HISTORY OF THALASSEMA.—Mr. H. W. Conn publishes, in the studies from the Biological Laboratory of Johns Hopkins University (Vol. III, No. 1), an abstract of his researches on the early stages of this Echiurid worm. The species under observation he regards as new, and mentions it under the name of *Thalassema melita*; it is of a dull red color, with a light yellow preoral lobe. It has the habit of seizing upon empty sand dollars and making its home in them. It enters the mouth of the shell while very small, but once within it grows to a considerable size, and remains the rest of its life a prisoner.

The most important points observed are the following:

1. The origin of the ova and spermatozoa as modified peritoneal cells; their growth in the body-cavity, and their preservation in a sexually mature condition in the sexual pouches.
2. Protrusion of two polar globules exhibiting a rhythm precisely similar to that of the segmenting ova.